

Mr. Lloyd's voyage from England to Zanzibar *via* the Cape; of his journey from Zanzibar to Uganda by the German road; of his residence in Uganda and of his share in the operations against our unfortunate Sudanese troops, in which he and his colleagues took a prominent part, although, as the author remarks, "the honours and distinctions that were showered upon the military section did not reach the missionaries"; and finally of his plucky march across the Ituri forests to Ugarowa (where Stanley first met with his dwarfs in this region), and return home down the Aruwimi and the Congo.

Mr. Lloyd's hurried march gave him few opportunities of studying the dwarfs, so that he adds little to the descriptions of Stanley, Stuhlmann, and Burrows. The only point worthy of notice is that his evidence supports the belief that the pygmies have a fetish worship. It is not clear from Mr. Lloyd's account what clan or tribe of pygmies he met with. How much has been lost by Mr. Lloyd's haste can be gauged from his remarks elsewhere on African customs. He looks on anthropological questions from a typically missionary standpoint. He has a low opinion of the "average African," whose universal laziness he deplores. He describes the aim of the Watoto festivals as "the indulgence in all the evil passions of human nature, fighting and murder, lasciviousness and wanton wickedness. Devil dances of a most disgusting character, witchcraft and fetishism are all practised upon these occasions, and it is at such times that one sees the utter degradation of heathenism." The customs of these Watoto "are most barbarous. For instance, they have an extraordinary practice of breaking off all the front teeth in the lower jaw"; this is "a thoroughly heathen practice."

Mr. Lloyd's contributions to the natural history of Central Africa are more startling than numerous. On p. 107 he gives us a photograph of a "boa constrictor" killed on Ukerewe, one of the islands in the Victoria Nyanza.

The main value of this book is its unwilling witness to the vast improvement effected in the Congo Basin since the establishment of the Congo Free State, twenty years ago. For instance, Mr. Lloyd was able to cross from the eastern frontier to the Atlantic in only a trifle over two months; he marched safely through the forests with a party of nineteen men; he found the cannibals of the Bangwa tribe always friendly, and remarks "that a jollier set of black men I never in all my life had to do with." This testimony as to the revolution of social conditions is the more striking because the author is even more critical of the Congo Free State than he is of the militarism of the Germans and the ritual of the Universities' Mission at Zanzibar.

#### TELEPHOTOGRAPHY.

*Telephotography.* By Thomas R. Dallmeyer. Pp. xv + 148. (London: William Heinemann, 1899.)

IN this handsome volume all that is at present known about the theory and practical use of the telephotographic lens is brought together. Mr. Dallmeyer, as our readers may remember, was one of the first who tried to

discover an arrangement of lenses which would produce an enlarged image of any distant object on the ground glass of a camera without any excessive length of camera, and the success which rewarded his labours is now well known.

It is interesting to remark that the author's attention was first directed to this subject by Dr. P. H. Emerson, who, as we are told in the preface, urged upon him "the necessity of a photographic instrument to enable the naturalist to record incidents that were then only possible by telescopic observation."

In the year 1892 Mr. Dallmeyer published a small pamphlet containing an interesting collection of papers that had been published relating to his new telescopic photographic lens, and he included in this numerous pictures illustrating the application to the photography of distant objects. This we understand is now out of print. The present volume will therefore be very acceptable to all who use, or intend to use, this form of lens, especially when one is reminded by Mr. Dallmeyer that, with the exception of one or two articles on the practical application of the lens by Mr. Lodge, Mr. Marriage, and Dr. Spitta, the subject has not been handled by any other English writer.

The author, in his treatment of the subject, introduces the reader first to the elementary properties of light; he then discusses the formation of images by the pin-hole camera, pointing out some valuable hints relative to the rendering of true perspective effects that may be gained from a study of the images obtained with such an instrument. The next two chapters deal with the formation of images by positive and negative lenses, and these serve as an excellent introduction to the following chapters, in which are described the methods of obtaining enlarged images by employing either two positive lens-systems or a combination of a positive and negative system, which constitutes the telephotographic lens.

From the theoretical the author turns to the practical side of the subject, and in the succeeding chapters he describes the use and effects of the diaphragm, practical applications and working data, concluding with a brief bibliography.

Quite a distinct feature of the volume is the fine series of illustrations, which brings out vividly, and more than mere words can describe, the great practical use of this form of lens, not only to the stay-at-home photographer, but to those whose duties lie in various directions. Nearly all the plates illustrate views taken, for the sake of comparison, with both the ordinary lens and the telescopic lens. Among these we find portraits which illustrate the value of this lens for obtaining correct perspective effects in the studio, enlarged pictures of the human eye, eclipse pictures, glaciers photographed at a distance of ten miles, views of an encampment taken from a balloon at a height of 800 metres, a photograph of a grounded man-of-war taken during war time at a distance of two miles, and lastly, reproductions of Mr. Lodge's excellent studies of birds and their nests. The variety of the illustrations gives one an idea of the numerous useful and valuable applications to which such a lens is specially adapted.

The now great popularity and wide use of the tele-

photographic lens makes us more than welcome Mr. Dallmeyer's book, which, besides supplying a distinct want, will be found a handsome and valuable addition to any photographic library. W. J. S. L.

#### NEW DATA FOR THE STUDY OF VARIATION.

*Ueber einige Aberrationen von Papilio machaon.* Von Dr. J. W. Spengel, Professor der Zoologie in Giessen. Pp. 48 Mit 3 Tafeln und 5 Abbildungen im Text. (Jena: Gustav Fischer, 1899.)

IT would be almost superfluous at the present time to offer an apology for the intimate study of variation in animals and plants. Evolutionists of whatever school of thought must necessarily be agreed upon the importance of variation as a factor in the production of new forms, though they may differ widely as to the means by which fresh species become established. In the present state of evolutionary theory it is of the utmost consequence to gain an insight into the laws which regulate variation, and this can only be done by the accumulation of accurate records of the results of experiment and observation. Many views on the subject are current, not one of which can be said to deserve more than a provisional acceptance, and all require to be rigorously tested in the light of facts. Hence any competent observer who—like Bateson, Standfuss, Merrifield and others—devotes himself to laboriously collecting and carefully recording data for the study of variation, whether natural or artificial, deserves well of all those who are interested in the progress of evolutionary theory.

The present treatise is a useful contribution to the mass of material that has lately been accumulating with reference to variation and aberration in the Lepidoptera. It was long ago pointed out by Bates and Wallace, and has often been insisted on since, that to the students of evolutionary law the wings of butterflies afford an unusually favourable field of observation. The days are gone by when the colour-patterns of insects were regarded as mere elegant curiosities, with no particular bearing on any question of scientific interest; and when deviations from the ordinary aspect of the species might be prized indeed by the collector for their rarity, but were thought to be beneath the notice of the genuine biologist. It is now fully recognised in most quarters that there is no real distinction to be drawn between "external characters" and points of structure; and, further, that while both sets of features are equally under the control of natural law, there are many principles of the first importance whose operation is more clearly discerned and more readily investigated in the former than in the latter. During the last few years much greater attention has been directed to the phenomena presented by colour-patterns than was previously the case; and many observers, both in this country and abroad, among whom may be reckoned Weismann, Eimer, Scudder, Mayer, Haase and Piepers, have attempted, with more or less success, to trace the history of existing patterns, and in some cases to formulate the laws under which certain changes of type have been brought about.

The author of the communication before us has occu-

pied himself for many years with the study of natural variation in the "swallow-tail" group of the genus *Papilio*. The results of his investigation of over 2000 specimens still await publication; but in the meantime he has here put on record a very exact description of several forms of the common swallow-tail (*Papilio machaon*), mainly from the collections of Staudinger, Kratz, Standfuss and the Hon. W. Rothschild, which come rather under the head of aberration than of ordinary variation. Some of these have been the result of temperature-experiments, but the greater number have occurred under normal conditions in the open. Dr. Spengel makes no attempt to found any theoretical considerations on the deviations they present, but restricts himself to a statement of fact which, in point of fulness and accuracy, contrasts very favourably with the haphazard descriptions at one time thought sufficient. For details, the reader must refer to the treatise itself; but we may here draw attention to the co-existence of structural with colour-abnormality shown in the remarkable aberration described on pp. 9-16.

The figures are good, and greatly assist in the comprehension of the text. The author's system of nomenclature for the elements of the pattern is easily intelligible, and may be followed without difficulty through the pages of description. As a contribution to the stock of material hitherto available, Dr. Spengel's treatise, though limited in its scope, is of considerable value; and his further analysis of natural variation in allied forms will be awaited with interest. F. A. D.

#### OUR BOOK SHELF.

*A. Koelliker's Handbuch der Gewebelehre des Menschen.* Sechste umgearbeitete Auflage. Dritter Band. Von Victor v. Ebner. Erste Hälfte. Verdauungs-organe, Respirations-organe, &c. Pp. vi + 402. (Leipzig: W. Engelmann, 1899.)

FOR the first time in its history the "Handbook of Histology" of the famous Würzburg professor of anatomy appears with the name of an editor upon its title-page in place of the octogenarian master whose book, when it first made its appearance in the 'forties, created an epoch in the history of histological literature, and was made familiar to English readers by its translation by George Busk and Thomas Henry Huxley. The work was a mine of original investigation, and served for many years as a quarry which furnished the materials for the building up of many an account of the structure of the body, in which the source of information was too often, it is to be feared, ignored. In later editions the general style of the book became somewhat altered, as it became necessary for the author to refer to facts regarding microscopic structure which were becoming added by others as well as by himself; and it must be admitted that, while the book thereby accumulated a greater amount of information, it became less readable and unquestionably less original. Nevertheless, the parts of this last edition which have already appeared have fully maintained the place which v. Kölliker's "Gewebelehre" had taken as the first authority upon the subject of which it treats.

In Prof. v. Ebner's hands the character of the rest of the work has been so maintained, and even the literary style so closely imitated, that it would be difficult to detect the alteration in authorship. The amount of labour involved in producing a work of this kind can only be roughly guessed at by those who have never themselves undertaken the task, and Prof. v. Ebner is to be